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EXAMINER	
CHU, KIM KWOK	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/563,274	SHIONO ET AL.	
	Examiner	Art Unit	
	Kim-Kwok CHU	2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *Amendments filed on June 30, 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3 and 10-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3 and 10-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *Jan 4, 2006* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Drawing Objection

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, in Claims 11, 22 and 24-40, the claimed "optical component .... to switch the state of polarization of the reproduction light" must be shown or the feature(s) canceled from the claims. No new matter should be entered.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> *The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.*

3. Claims 1-3, and 10-40 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1, the last paragraph, the limitation "the first semiconductor laser light source has a characteristic such that it emits the reproduction light in which an amplitude of a polarized light component that is polarized perpendicular to the track direction is greater than that of the other polarized light component" is a misdescriptive claim language because as

disclosed not the laser light source itself but also together with a wavelength plate 20 in order to "emits the reproduction light in which an amplitude of a polarized light component that is polarized perpendicular to the track direction is greater than that of the other polarized light component".

Regarding claims 2 and 3, in the limitations "linearly polarized component…..is linearly polarized light that is polarized perpendicular to the track direction" (claim 2) and "polarized light component…elliptically polarized light whose main component is a polarized light component that is polarized perpendicular to the track direction (claim 3) are vague and indefinite as it is merely functional language without an association of structure to perform the functions claimed.

Regarding claim 10, in the last paragraph, the limitation "the first semiconductor laser light ...emits the recording light in which an amplitude.....other polarized components" is misdescriptive claim language. Please refer to the comment cited above to claim 1 of a similar issue.

Regarding claim 21, the limitation "the second semiconductor laser light source ....greater than that of other polarized light components" is rejected for the same reason as set forth in the discussion of claim 1 and claim 10 above.

Regarding claim 24, in the last paragraph, "the first laser light sources" does not have antecedent basis and thus "switch the state of polarization of the reproduction light emitted from the first semiconductor laser light sources" is not understood. The "polarized light component of the reproduction light that is polarized perpendicular to the track direction" and the "other polarized light components" are vague and indefinite as it is not clear from which source these polarized components are meant to come from.

Regarding claim 24, last paragraph, lines two and three, the phrase "an optical component ..... to switch the state of polarization of the reproduction light" is vague as what is the state of light polarization being switched/changed. In this case, it is not clear what is the original polarized light state and what is the final polarized light state. Furthermore, it is not clear whether or not the state of polarized light is under a continuous switching operation.

Similarly, in each of the Claims 11 and 22, the claimed feature "an optical component ..... to switch the state of polarization of the reproduction light" is vague as what is the state of light polarization being switched/changed.

The claims not specifically mentioned above are indefinite based upon their dependence on the indefinite Claim 1.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> *(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.*

5. Claims 1-3, 10, 13, 14, 16, 18, 19, 22, 24-27, 30, 31, 33, 35, 36, 39 and 40 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Aoyama et al. (U.S. Application 2005/0058028) in view of Sugaya et al. (U.S. Patent 5,602,825).

Aoyama teaches an optical information reproduction device (Fig. 23) very similar to that of the present invention. For example, Aoyama teaches the following:

Regarding Claim 1, the optical information reproduction device (Fig. 23) comprising: an information recording medium (Fig. 4) that includes a recording unit (recording layers) having a multilayer structure of recording layers (Fig. 4) capable of recording information three-dimensionally (Figs. 4; pits pp are three-dimensional) and from which can be reproduced information recorded on one of the recording layers through any of the other recording layer or layers (Fig. 4; recording layers can be selected/read through from the multiple layers) and provided with a track (Fig. 5) having a specific track pitch (Fig. 6), with which information is recorded by forming a plurality of recording marks (pits) along the track of the recording unit by a mark length recording method (Fig. 6; pits pp have length to represent data), and when the track direction of the recording marks is assumed to be their longitudinal direction and the direction perpendicular to the track direction

is assumed to be their lateral direction (Fig. 6), for recording marks located substantially in the same plane (Fig. 6), the total area of elongated recording marks pp, whose longitudinal length is greater than their lateral length (Fig. 6), is greater than the total area of recording marks having other than elongated shapes (Fig. 6; elongated data marks cover more medium area than other non-data area); a first semiconductor laser light source LD (Fig. 23) for emitting reproduction light having a wavelength λ1; an objective lens 16 (Fig. 23) for focusing the reproduction light emitted from the first semiconductor laser light source LD on the recording unit (recording layers) of the information recording medium 17 (Fig. 23); and a first photodetector 28 (Fig. 23) for detecting a reproduction signal from the reflected light from the recording unit, wherein the information recording medium 17 has a track pitch and a wavelength λ1 of the reproduction light (Fig. 7), the first semiconductor laser light source LD (Fig. 23) has a characteristic such that it emits the reproduction light in which an amplitude of a polarized light component (main light beam in vertical direction above the track) that is polarized perpendicular to the track direction is greater that that of the other polarized light component (section 103 lines 1-3).

However, Aoyama does not disclose that the track pitch can not be more than 1.3 times the wavelength of the reproduction light.

Sugaya teaches an information recording medium having a track pitch which is less than 1.3 times the wavelength of the reproduction light (Fig. 3; abstract).

Aoyama teaches an optical medium having a track pitch of 1.6 um which is larger than the required claimed track pitch of about 1 um (1.3 times 780 nm). When there is a benefit of increasing a recording capacity of the optical medium, it would have been obvious to one ordinary skill in the art to adapt Sugaya's track pitch in Aoyama's medium, because Sugaya's track pitch can store more information in the same CD by increase the data stored density.

Regarding Claim 2, Aoyama further teaches that the reproduction light focused on the recording unit (recording layers) is linearly polarized light that is polarized perpendicular to the track direction of the information recording medium (section 103 lines 1-3; laser source LD generates liner polarized light beams so that beamsplitter 11, 19 can separate returned light beams into different paths).

Regarding Claim 3, Aoyama further teaches that the reproduction light focused on the recording unit is elliptically

polarized light whose main component is a polarized light component that is polarized perpendicular (Fig. 23; the light beam is not a perfect circular polarized light beam).

Regarding Claim 10, Aoyama further teaches that the first light source LD (Fig. 23) further emits recording light with a wavelength of λ2 (laser emits a light with a wavelength range from λ1 to λ2), the objective lens 16 (Fig. 23) focuses the recording light on a recording unit included in the recording unit, and the recording light focused on the recording unit (recording layers) includes as its main component a polarized light component that is polarized perpendicular to the track direction of the information recording medium (section 103 lines 1-3).

Regarding Claim 13, Aoyama further teaches that the first semiconductor light source LD (Fig. 23) further emits recording light with a wavelength of λ2, the wavelength λ1 of the reproduction light is shorter than the wavelength λ2 of the recording light (Fig. 23; laser emits a light with a wavelength range from λ1 to λ2).

Regarding Claim 14, Aoyama further teaches that the first light source LD further emits recording light with a wavelength of λ2 (laser emits a light with a wavelength range from λ1 to λ2), the recording light is pulsed light (laser light is driven

by pulse and therefore its generated beam is a pulse light), and information is recorded by using nonlinear absorption (recording medium has a nonlinear recording layer which discriminates light wavelengths).

Regarding Claim 16, Aoyama further teaches that a surface area of a light-receiving component (Fig. 3; recording layers) provided in the first photodetector is set to (being focused on) an area over which light conveying (read/write) target information included in the reflected light is received (Fig. 5).

Regarding Claim 18, Aoyama further teaches that the recording marks are voids (Fig. 6).

Regarding Claim 19, Aoyama further teaches that the recording marks are recording pits produced by refractive index changes (Fig. 6; pits are formed by refractive index changes as a result of thermal deformation of the layers of the recording medium).

Regarding Claim 22, Aoyama further teaches that the first light source LD further emits recording light with a wavelength of λ2 (laser emits a light with a wavelength range from λ1 to λ2), the objective lens 16 focuses the recording light on the recording unit included in the information recording medium, and comprising an optical component (Fig. 23; within LD) that

functions so as to switch the state of polarization of the recording light emitted from the first semiconductor laser light source, whereby the amplitude of a polarized light component of the recording light that is polarized perpendicular to the track direction is caused to be greater than that of other polarized light components (Fig. 23; optical component is an inherent feature within the laser light package for controlling the polarization of the emitted light beams).

6. Claims 24-27, 30, 31, 33, 35, 36, 39 and 40 have limitations similar to those treated in the above rejection, and are met by the references as discussed above. Claim 24, however also recites the following limitation which is also taught in the prior art of Aoyama:

Regarding Claim 24, an optical component (Fig. 23; within LD) is provided along the optical path between the first semiconductor laser light source LD and the objective lens 16 so as to switch the state of polarization on the reproduction light emitted from the first semiconductor laser light source (Fig. 23; optical component is an inherent feature within the laser light package for controlling the polarization of the emitted light beams).

Allowable Subject Matter

7. Claims 11, 12, 15, 17, 20, 21, 23, 28, 29, 32, 34, 37 and 38 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office

action and to include all of the limitations of the base claim and any intervening claims.

8. The following is an Examiner's statement of reasons for the indication of allowable subject matter:

As in claims 11 and 28, the prior art of record fails to teach or fairly suggest an optical information reproduction device having following feature:

the wavelength λ1 of the reproduction light is different from the wavelength λ2, of the recording light and the optical information reproduction device further comprises an optical component, located along the optical path between the first light source and the objective lens, for switching between a polarization state of reproduction light emitted from the first light source and a polarization state of recording light emitted from the first light source or a second light source, and for utilizing this difference in wavelength so that the reproduction light focused on the recording unit will include as its main component a polarized light component that is polarized perpendicular to the track direction of the recording unit, and so that the recording light focused on the recording unit will be circularly polarized light.

As in claims 15 and 32, the prior art of record fails to teach or fairly suggest an optical information reproduction device having following feature:

a pinhole plate that is disposed along the optical path between the information recording medium and the first photodetector, and has a pinhole that transmits light conveying target information included in the reflected light.

As in claims 20 and 37, the prior art of record fails to teach or fairly suggest an optical information reproduction device having following feature:

the optical component functions substantially as a λ1/2 integer multiple plate with respect to the reproduction light.

As in claims 21 and 38, the prior art of record fails to teach or fairly suggest an optical information reproduction device having following feature:

the optical information reproduction device further comprising a second semiconductor laser light source for emitting recording light with a wavelength of λ2 Wherein the objective lens focuses the recording light on the recording unit included in the information recording medium, and the second semiconductor laser light source has a characteristic such that it emits the recording light in which an amplitude of a polarized light component that is polarized perpendicular to the

track direction is greater than that of other polarized light components.

The features indicated above, in combination with the other elements of the claims, are not anticipated by, nor made obvious over, the prior art of record.

Response to Remarks

9. Applicant's Remarks filed on June 30, 2010 have been fully considered. First, Applicant points out that the prior art of Sugaya does not teach that recorded information can be reproduced through any of the other recording layer or layers (page 14 of the Remarks, lines 3 and 4). Accordingly, a newly found prior art of Aoyama which teaches recorded information on recording layers and can be reproduced (read) through any of the

other recording layers is cited to replace the prior art of Sugaya as a primary reference. The original cited prior art of Sugaya is used as a secondary reference because it teaches the claimed track pitch. Furthermore, the claimed feature "to switch the state of polarization of the recording light ....." is considered vague and Claims containing such feature is rejected under 35 USC § 112, second paragraph.

10. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Kim CHU whose telephone number is (571) 272-7585 between 9:30 am to 6:00 pm, Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa Nguyen, can be reached on (571) 272-7579.

The fax number for the organization where this application or proceeding is assigned is (571) 273-8300

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

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